

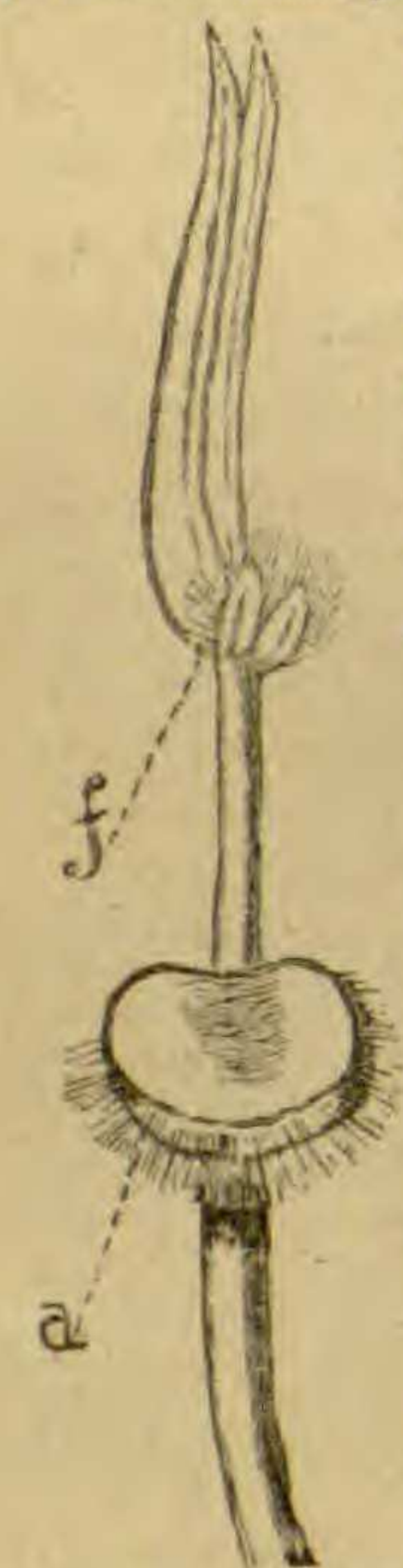
in accordance with accepted notions. The physiological method will bring a certainty so far as it accomplishes a conclusion, which the method of systematic botany does not supply. Until we can separate escapes from natural species, that is, until we can determine species apart from changes impressed upon plants by man, it seems unsafe to refer our cultivated plants to localities wherein occur wildings of like species. Far preferable the argument from historical mention of the habits and movements or migrations of peoples. It seems probable that *variability or true-ness to seed may become the test as to the sufficiency of a conclusion in favor of or against an assigned species*. This fact is an interesting one for the scholarly botanist, for it only needs the reading of De Candolle's work to realize the uncertainty at present existing.

GENERAL NOTES.

Notes on Mahernia.—The genus *Mahernia* in the natural order *Sterculiaceæ* presents many points of botanical interest. Our readers doubtless are familiar

with the shrub as it occurs in conservatories, with its pinnatifid leaves, very large and laciniate stipules, appearing like a whorl of leaves, and cymose clusters of honey-yellow flowers. These stand two together, bell-shaped and pendant from the branches. The blossoms possess a most delicious fragrance. I have elsewhere recorded the observation of Miss Anna Chace, of Valley Falls, R. I., that of the two flowers one is always convolute to the right, and the other to the left.

I have now to mention some notes that I made upon the species last winter in relation to the manner in which its nectaries are protected from small predatory insects. It will be remembered



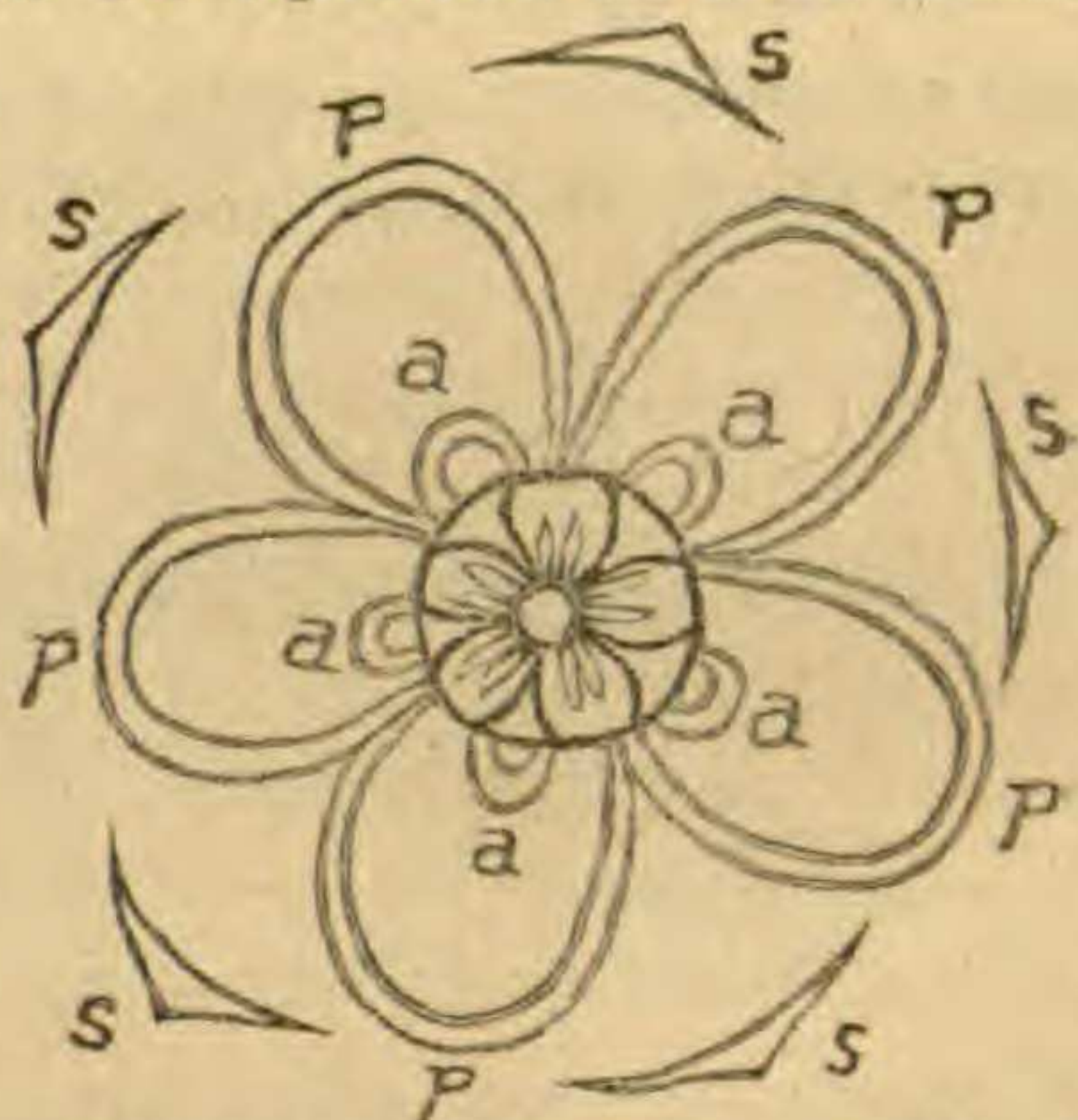
A stamen with fan-like row of hairs at *f*, and fleshy disk at *d*.



A petal with its nectary, *n*.

that the five stamens are somewhat monadelphous, and that they stand opposed to the five petals. This ante-position suggests the suppression of

a second whorl in the andrœcium. The anthers are upturned at their bases, and have a fan-shaped row of hairs. The filaments present about midway a fleshy, crescentic disk, pubescent with downward pointing hairs. The incurved claws of the petals form nectaries over which these disks exactly fit. No more perfect protection could be offered. This disk probably offers no obstacle to strong flying insects attracted by the powerful fragrance and the bright color of the flowers, but would effectually prevent the entrance of minute creeping species. The accompanying diagrams will illustrate the particular parts, and the ground plan of these parts in their mutual relations.



Ground plan of flower: s. sepals; p. petals; a, crescentic disks of filaments.

W. WHITMAN BAILEY, *Brown University.*

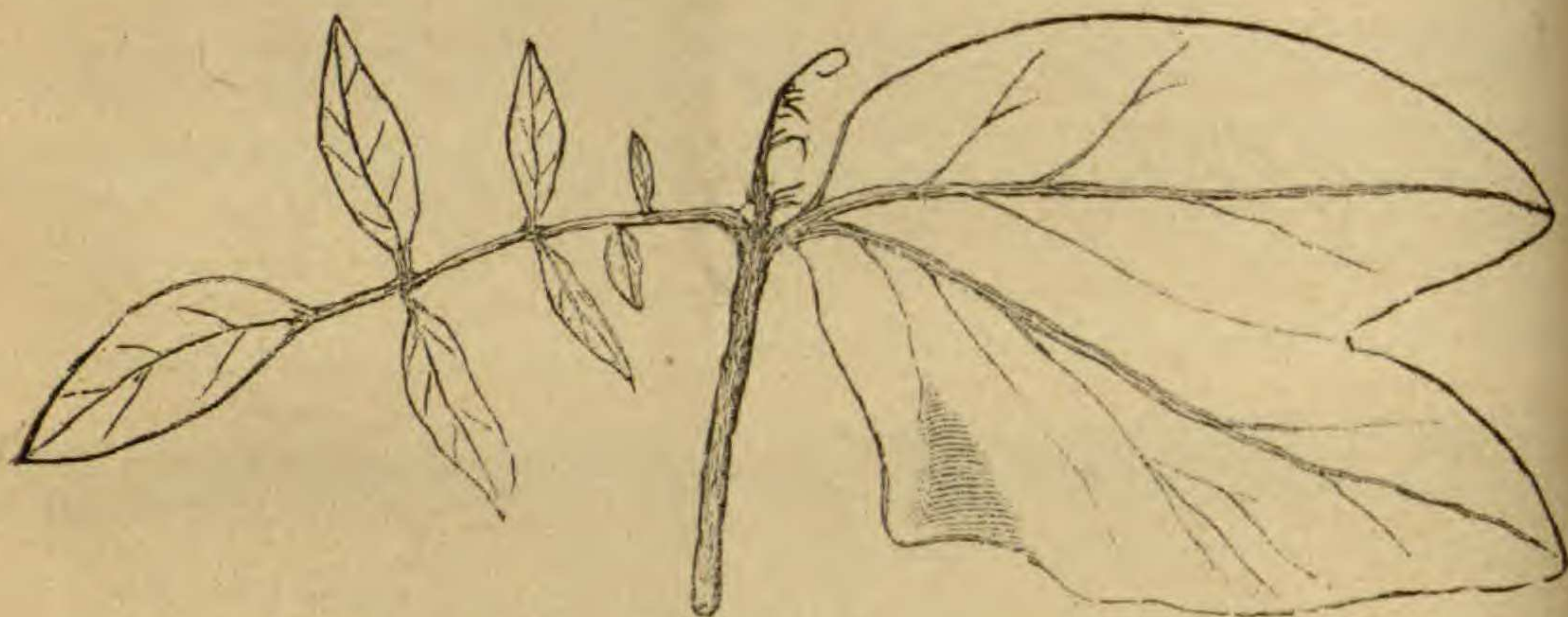
Remarkable Vitality of Willow Twigs.—During the summer of 1853 Sylvester Piper, now a resident of 3526 Jones street, Chicago, called my attention to a willow basket in a ditch, the basket having sprouts several inches in length all around it. A curiosity so remarkable—possibly having no parallel—led me to take immediate steps for its preservation. I dug the basket up with great care, and found it to be a worn out cast-away which had done service as a basket until it had become so badly worn as to be worthless, when it found its way into a ditch at the base of the bank of the Illinois and Michigan canal, about 300 feet from the Bridgport lock (now within the limits of the city) whence I transplanted it with great care, placing it in a wet place in my father's garden; but notwithstanding its former vitality and careful removal, the shock was too great for the tender shoots and they all died. The basket was made wholly or in part of unpeeled willow, whose dried and withered germs needed only the opportunity to return to life. I have often resolved to have the story of the "willow basket" written and placed upon record while there were still living other witnesses than myself to verify it.

In reply to a suggestion of Prof. Gray, "Whether it was possible that willow sprouts may have sprung up around the basket instead of from the willow of which it was composed," I need but add that with a perhaps more than ordinary love of tree culture, commencing in early boyhood and continuing to some extent to the present time, it seems impossible that I should be misled or satisfied with casual observation. In this case I was not. I handled the basket with my own hands while the sprouts were still fresh and growing.

OSSIAN GUTHRIE.

[This incident comes to us abundantly substantiated by several persons of unexceptionable integrity and forcible acumen. Its scientific value was suggested to the author by Mr. Leander Stone, assistant editor of *Northwestern Christian Advocate*, Chicago; and it was referred to the GAZETTE for publication by Dr. Asa Gray, to whom the article was first sent.—EDS.]

Cobæa scandens.—Among some specimens of *Cobæa scandens* appeared one that seemed to me worthy of notice. The cotyledons were grown together, the first pair of true leaves were also combined in one and placed opposite the



double cotyledon. The first pair of leaves usually has only six leaflets, while this has eight. The plant is represented by the accompanying figure.

F. L. HARVEY.



Rudbeckia fulgida.—I believe the ligulate flowers of the order *Compositæ* are regarded as monopetalous corollas split down on one side. While collecting some specimens of *Rudbeckia fulgida* recently, I found one of the ray flowers monopetalous and of the form represented by the accompanying figure.

F. L. HARVEY.

The Root-hairs of *Adiantum pedatum*, L.—While examining the root-hairs of the above-named fern recently, I found two instances of abnormality which seem worth recording.

The root-hairs of the Maiden-hair fern are exceedingly numerous and long, so numerous and so long that in most cases they form a brown, cottony mat about the rootlets. These hairs are all single-celled, having the proximal moiety wavy, and the distal end clubbed and otherwise deformed. The walls of two of the hairs were found to present near their proximal ends a *spiral thickening*, giving them an extraordinary likeness to spiral vessels. The spiral thread extended in one case one-fourth of the length of the hair, and in the other half as far. In both the thread commenced and ended quite abruptly. The accompanying figure will give an idea of the diameter of the hair, and the closeness of the spiral.



Root-hair of *Adiantum pedatum*, L., showing spiral thickening. $\times 450$. p, p, scattered masses of protoplasm. s, spiral thread. w, wall of hair.

C. R. B.

The Chlorophyll Bands of Spirogyra.—In some cases it is desirable to count the number of chlorophyll bands in each cell of a filament of *Spirogyra*. When the band is single or double there is no difficulty, but when the filaments are crowded with chlorophyll the task is not so easy. While studying *Spirogyra* Mr. O. F. Dragoo, of the class of '86, Purdue University, devised a novel and

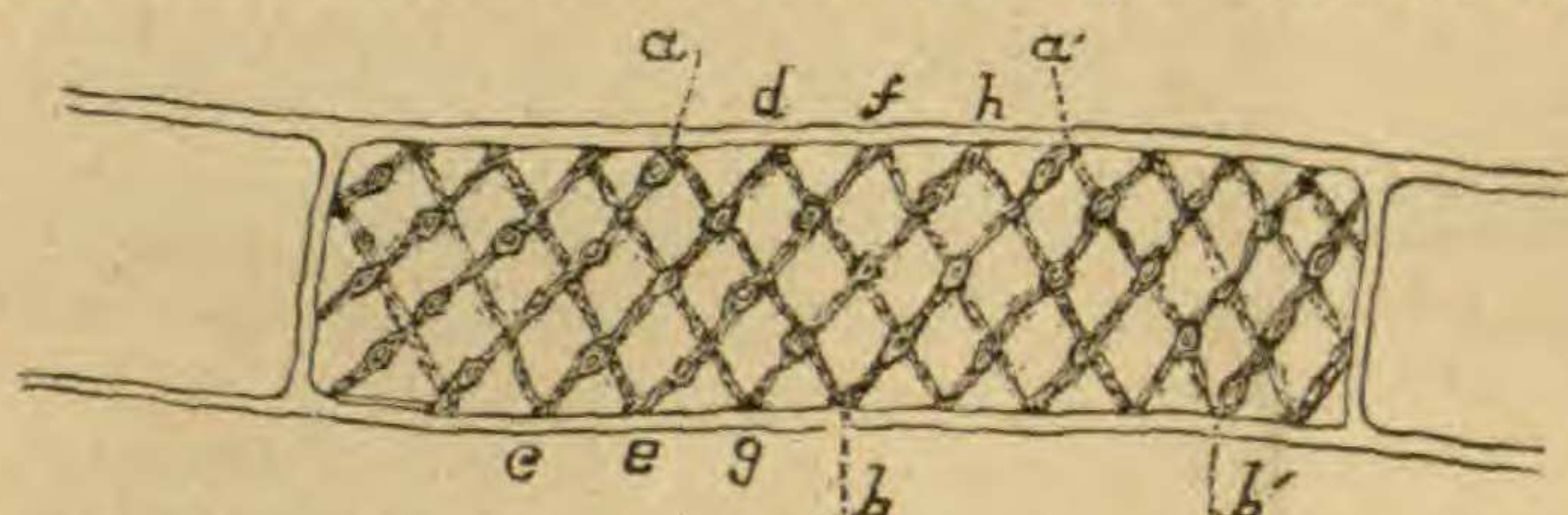


Diagram of the chlorophyll bands in a cell of *Spirogyra*.

certainly very ingenious plan, which may be explained by reference to the accompanying diagram.

Select any band, as *ab*, and focus on its profile, as at *a*. Follow the band to the opposite side of the cell where it is again seen in profile, as at *b*. Fix the points *a* and *b* in memory, focus on the upper surface of the filament and count the number of bands between *a* and *b*, in this case three, *cd*, *ef*, *gh*. This number, increased by one, the one first examined, will be the number of distinct bands in the cell.

C. R. B.

EDITORIAL NOTES

THE PHILADELPHIA ACADEMY OF SCIENCES is building up a very fine herbarium, claiming now to possess probably one-half the known species of plants. The growth has been very rapid for some years, the past year showing an addition of 2,868 species. The species are all poisoned, labeled, and systematically arranged, and this great work is being done gratuitously by the persistent labors of Mr. J. H. Redfield, assisted by other botanists.

DR. T. F. ALLEN, in the *Torrey Bulletin* for October and November, gives some notes on the American species of *Tolypella*, accompanied by six plates. A key to the species is given and six new species described.

IN THE DECEMBER number of the *Gardener's Monthly* is given an abstract of a lecture by Dr. J. T. Rothrock upon "American Forestry." The statement is made that, so far as the lumbering product is concerned, Michigan ranks first, followed by Pennsylvania, Wisconsin, and New York, and far down the list stand Oregon and Washington. If the forests of Pennsylvania are ravaged as in the past, the lecturer estimated that in much less than fifty years they would be stripped, and it is urged that forests should be planted at least as fast as they are cut down.

PROF. C. E. BESSEY, in the December *Naturalist*, describes a new species of insect-destroying fungus, under the name *Entomophthora Calopteni*. It occurs as a clay-colored mass in the body cavity and femora of the common locust, *Caloptenis differentialis*.

IN THE AMERICAN JOURNAL OF SCIENCE for December, Dr. Gray gives quite an elaborate review of De Candolle's "Nouvelles Remarques sur la Nomenclature Botanique," which for those who either can not read or do not have the original will be a convenient substitute for a translation.

MR. THOS. MEEHAN calls attention to the fact that considerable quantities of a sweet liquid are frequently secreted by certain flowers during and after anthesis which are not derived from nectar glands, and do not appear to be associated with means for cross-fertilization.